

CLAIM AMENDMENTS

IN THE CLAIMS

This listing of the claims will replace all prior versions, and listing, of claims in the application or previous response to office action:

1. (Currently Amended) A method of identifying fault conditions in an automation system~~[[,]]~~ comprising ~~the steps of~~:
 - identifying components and sensors in the system,
 - identifying inputs to each identified component,
 - receiving outputs from said sensors;
 - determining functional relationships between the inputs and outputs for each identified component, ~~and~~
 - determining ~~[[a]]~~ weight values for ~~[[a]]~~ possible fault conditions for each component based on said functional relationship; and
 - determining the most likely fault condition~~[[s]]~~ from said possible fault conditions based on said weight values.

2. (Currently Amended) ~~The~~ A method ~~[[of]]~~ according to claim 1, further comprising the step of using the identified inputs and outputs of a specific component and sensors and the functional relationships of a corresponding generic component to identify ~~the~~ a possible fault condition~~[[s]]~~.

3. (Currently Amended) ~~The~~ A method ~~[[of]]~~ according to claim 2, further comprising the step of defining component libraries that describe the functional relationships of the generic component~~[[s]]~~.

4. (Currently Amended) ~~The~~ A method ~~[[of]]~~ according to claim 2, further comprising the step of creating a diagnostic program from the functional relationships of ~~the~~ a generic component~~[[s]]~~ associated with each component.

5. (Currently Amended) ~~The~~ A method ~~[[of]]~~ according to claim 4, further comprising the step of transforming the functional relationships into fault conditions.

6. (Currently Amended) ~~The~~ A method ~~[[of]]~~ according to claim 5, wherein the step of transforming is implemented in an off-line phase during which the diagnostic program is created, and an on-line phase during which available inputs and outputs are supplied to the transformed functional relationships in the control program~~[[,]]~~ to identify fault conditions.

7. (Canceled)

8. (Currently Amended) ~~The~~ A method ~~[[of]]~~ according to claim 1, further comprising the step of including state information for at least one of the components to define the state of the component at a different time.

9. (Currently Amended) A method of defining diagnostic code for an automation system[[,]] comprising~~the steps of~~:

identifying the functional elements and associated sensors of the system;

defining inputs for each of the functional elements;

receiving outputs from said associated sensors;

defining functional relationships between inputs and associated outputs for each functional element;~~and~~

expressing the functional relationships using a programming language;

determining [[a]] weight values for a possible fault conditions for each functional element based on said functional relationship; and

determining the most likely fault condition[[s]] from said possible fault conditions based on said weight values.

10. (Currently Amended) ~~The~~ A method [[of]] according to claim 9, wherein the programming language is a symbolic language.

11. (Currently Amended) ~~The~~ A method [[of]] according to claim 9, wherein the step of defining functional relationships for at least some of the functional elements includes utilizing a component library that defines the functional relationships between inputs and outputs of at least one generic element.

12. (Currently Amended) ~~The~~ A method [[of]] according to claim 11, wherein the step of defining the functional relationships includes the step of defining

functional relationships and inputs and outputs of ~~the~~ a generic element~~[[s]]~~ corresponding to the functional elements in the system.

13. (Currently Amended) ~~The~~ A method ~~[[of]]~~ according to claim 9, further comprising the step of including state information for at least one of the components to define the state of the component at a different time.

14.-19. (Canceled)